

Integrative module technology of future engineers training in the field of ecological-economic safety

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Abstract

© Authors. The paper relevance is conditioned by the society and the state need to train the specialists who are ready to work in conditions of high ecological production risks. The paper purpose is to develop and justify the system on forming the technical universities graduates' professional competence in the field of environmental and economic safety on the basis of integrative-modular learning technology's implementation. The authors presented a structural and functional model for integrating the future specialists' training content in the field of environmental and economic safety. The research's leading approach is a systematic approach that allows considering the future specialists' professional competence forming process in the field of environmental and economic safety on the basis of integrative-modular technology. The authors develop a criteria-leveled component aimed at revealing the level of the professional competence formation in the field of environmental and economic safety. The system diagnostics containing the necessary set for criteria allowing estimating the level of graduates' professional competence formation in the sphere of ecological and economic safety is presented. The paper is intended for researchers, practitioners, enterprises managers involved in the issues on environmental and economic production activities and engineers' vocational training.

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Keywords

Ecological and economic safety, Educational organizations, Integrative-modular technology, Professional competence formation, Specialists training, System diagnostics

References

- [1] Baklashova, T. A., Galimova, E. G., & Baklashova, O. N. (2017). Social Capital of Educational Institution: Contemporary State, Features and Prospects for the Development. *Man In India*, 97(15), 227-241
- [2] Murav'eva, E. V. (2017). Formation of ecocentrism in technical higher education. *Problems of modern pedagogical education*, 55(4), 300-306
- [3] Murzin, A. D. (2009). Identification and diagnostics of ecological and economic risks of urbanized territories. *Russian academic journal*, 9(4), 38-41
- [4] Prokofieva, E. N. (2012). Integrative game as a means of forming professional competences in the profile bachelors "protection in emergency situations". *Kazan Pedagogical Journal*, 4(94), 33-38
- [5] Sedova, E. N. (2008). Models of multiple selection in tasks of estimation and management of environmental economic risks. *Bulletin of the Orenburg State University*, 10(92), 96-102

- [6] Surovitskaya, G. V. (2013). Quality of the working power in the conditions of integration processes in the system of higher education. *Economics of education*, 2(75), 43-49
- [7] Veretehkin, A. V. (2017). Dynamics and management of ecological-economic safety of industrial enterprise in modern conditions. *Bulletin of the National Research and Design Institute*, 5(72), 70-80
- [8] Zeer, E. F. (2001). *Psychology of professions*. Moscow: Pedagogy
- [9] Cai, J., Youngblood, V. T., Khodyreva, E. A., & Khuziakhmetov, A.N. (2017). Higher Education Curricula Designing on the Basis of the Regional Labour Market Demands. *EURASIA Journal of Mathematics, Science and Technology Education*, 13(7), 2805-2819
- [10] Konysheva, A. V., & Ibragimova, E. N. (2017). Training of Engineers in Mathematics at University on the Basis of the Information Cybernetic Approach. *EURASIA Journal of Mathematics, Science and Technology Education*, 13(8), 4379-4391
- [11] Kong, Y., Kayumova, L. R., & Zakirova, V. G. (2017). Simulation Technologies in Preparing Teachers to Deal with Risks. *EURASIA Journal of Mathematics, Science and Technology Education*, 13(8), 4753-4763
- [12] Cherdymova, E. I., Kuznetsov, V. A., Machnev, V. Y., Solovova, N. V., Sarbaeva, I. Yu., & Masalimova, A. R. (2017). Eco-Vocational Consciousness Formation Model of a Specialist in Modern Mega Polis. *Eurasian Journal of Analytical Chemistry*, 12, 493-507
- [13] Shushara, T. V., & Khuziakhmetov, A. N. (2017). The Problem of Professional Orientation of Youth: Trends and Prospects. *Man In India*, 97(14), 197-205
- [14] Buletova, N. E. (2013). *Ecological and economic safety: nature, contents and problems of diagnostics in the regions of Russia*. Volgograd: Science
- [15] Modarres, M. (2003). *What Every Engineer Should Know About Reliability and Risk Analysis*. New York: Marcel Dekker Inc
- [16] Roland, H. E., & Moriarty, B. (1990). *System safety engineering and management*. New York: John Wiley & Sons
- [17] Gorbunova, N. V., & Mokeyeva, E. V. (2017). Innovative Educational Environment of Higher Educational Institution. *Man In India*, 97(15), 21-40
- [18] Khrulyova A. A., & Sakhieva R. G. (2017). Forming of Informational Culture as a Necessary Condition of the Level Raising of Higher Education. *Man In India*, 97(15), 211-225
- [19] Yakupova, R. M. (2017). Fundamentals of Environmental Problem and Transformation of Scientific Knowledge in Environmental Knowledge. *Man In India*, 97(15), 313-330
- [20] Beck, U. (1992). *Risk Society. Toward a New Modernity*. London: Sage Publications
- [21] Baetova, D. R. (2016). Economic risks and risks of quality as strategic risks of educational institutions. *Competitiveness in the global world: economy, science, technology*, 3, 16
- [22] Belov, P. G. (2011). *System analysis and modeling. Theoretical basis and forecasting*. St. Petersburg: The strategy of the future
- [23] Lepeshinsky, I. Y. (2009). Integrated approach to the formation and development of professionally important competences of the future military engineer. *Omsk Scientific Bulletin*, 2(76), 150-151
- [24] Prokofieva, E. N. (2015). Safety and risk characteristics: aspects of understanding. *Kazan Pedagogical Journal*, 1(108), 71-76
- [25] Prokofieva, E. N. (2013). Formation of professional competences by the profile bachelor profiles "protection in emergency situations" by means of integrated game (PhD Thesis). Kazan: Institute of Pedagogy and Psychology of Professional Education of the Russian Academy of Education
- [26] Belik, I. S. (2013). *Ecological and economic safety. Textbook for students studying under the bachelor's degree program in the field of preparation "Economics"*. Ekaterinburg: Ural Federal University The first President of Russia, Boris N. Yeltsin
- [27] Davydenko, A. G. (2010) Integration processes in the system of professional education. *Council of Rectors*, 2, 30-34
- [28] Oreshkova, S. P., & Ertskina, E. B. (2011). About the readiness of a teacher of technical higher education for the formation of professional competencies of bachelors. *Fundamental research*, 12(1), 46-51
- [29] Mudretsov, A.F. & Tulupov A.S. (2011). National security (ecological-economic aspect): concepts, problems, solutions. Moscow: Establishment of the Russian Acad. Sciences Institute of Market Problems of the Russian Academy of Sciences
- [30] Murav'eva, E. V., & Romanovsky, V. L. (2010). Diversial analysis in forming risk-thinking at specialists in the field of security. *News of the Samara Scientific Center of the Russian Academy of Sciences*, 12(9), 2306-2308
- [31] Romanovsky, V. L., Murav'eva, E. V., & Chabanova, A. A. (2015). Applied technospheric risk in the context of risk management of technospheric complexes. *Bulletin of the Scientific center of vital activity safety*, 3(25), 123-128
- [32] Modarres, M., Kaminsky, M., & Kristov, V. (2007). *Reliability engineering and risk analysis: A practical guide*. New York: Marcel Dekker Inc

- [33] Nasyrova, E. F. (2010). Application of information technologies for integrated modular and remote training of students of higher education. Collection of scientific works Surgut, 1(10), 124-129
- [34] Levina, E. Y., Yevgrafova, O. G., Derdizova, F. V., Zagladina, E. N., Levchenkova, T. V., Murugova, V. V., Blinova, L. N., & Anfilatova, O. V. (2016). Educational systems scenarios development in modern conditions. International Review of Management and Marketing, 2, 76-81
- [35] Kononova, O. V., Oleshkevich, N. A., & Sadon, E. V. (2006). Control for the formation of professional competence. Psychological organizational forms. Bulletin of the Siberian State Aerospace University Academician M.F. Reshetnev, 6(13), 282-287
- [36] Bespal'ko, V. P. (2006). Parameters and criteria for the diagnostic purpose. School Technologies, 1, 118-128
- [37] Shaidullina, A. R., Krylov, D. A., Sadovaya, V. V., Yunusova, G. R., Glebov, S. O., Masalimova, A. R., & Korshunova, I. V. (2015). Model of Vocational School, High School and Manufacture Integration in the Regional System of Professional Education. Review of European Studies, 7(1), 63-67
- [38] Kayumova, L. R., & Zakirova, V. G. (2016). Educational environment risks: Problems of identification and classification. International Journal of Environmental and Science Education, 11(6), 1013-1019
- [39] Lisitzina, T. B., Pavlova, A. V., Khanmurzina, R. R., Vlasova, V. N., Chitalin, N. A., Maksimov, I. N., & Zakirova, V. G. (2015). Features of the Professional and Motivating Training Content Design for Students Majoring in "Tourism". Asian Social Science, 11(1), 148-153
- [40] Kurbanov, R. A., Gurbanov, R. A., Akhmetov, L. G., Kondratyuk, D. L., Usanov, V. E., Molchanov, S. V. (2017). Methods for University Students' Readiness Formation for a Healthy Lifestyle. Modern journal of language teaching methods, 7(3), 497-503